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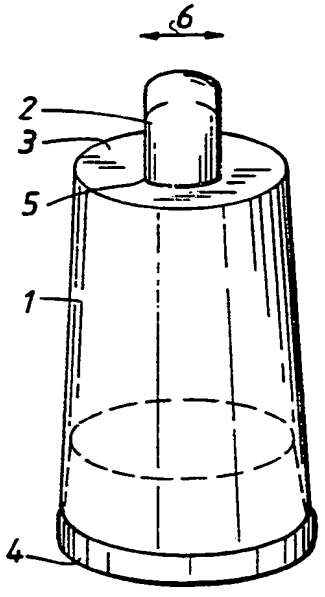
(54) Title: DISPOSABLE CONTAINER FOR SINGLE DOSAGE APPLICATIONS

(57) Abstract

A thermoplastic, disposable container for single dosage applications having a body portion (1) and two end walls (3, 4) with closure means covering an outlet in one of said walls, wherein the closure means comprises a break-off, hollow extension (2) of the container, thereby allowing the container to be opened with one hand.



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TITLE:
Disposable Container for Single Dosage Applications

TECHNICAL FIELD

The present invention relates to a thermoplastic, disposable container according to the preamble of claim 1 and a method of its manufacture according to the preamble of claim 6. The invention also relates to an end closure for a container according to the preamble of claim 8.

BACKGROUND

There is an increasing demand for containers which can hold sufficient contents for a single application. A typical use for such containers is in hotels where, for example hair shampoo and bathwater additives are provided for the guest. In the past these toiletries has been provided in a tear-open laminated plastic/foil sachet or in a small screw top bottle which can have a tamper-evident seal.

These prior art containers share the same disadvantage, i.e. a two-handed operation is required to gain access to contents.

EP-A-0 076 418 describes a method for manufacturing an injection-moulded container having a break-off cap to facilitate the opening of the container. The cap is formed as an extention of the neck region of the container and, during the injection-moulding, a weakened region is formed in the exterior surface of the container. Whilst such a container is easier to open than the previously mentioned containers, the container according to EP-A-0 076 418 displays several disadvantages, most notably that a complicated mould arrangement is needed due to the exterior weakened region. Additionally, said region of weakening is not particularly attractive, whilst the non-uniform thickness

displayed by the neck- and cap portions can lead to irregular cooling of the container after moulding.

PROBLEM AND SOLUTION

Accordingly a need exists for a disposable container which can be opened one-handedly and which is inexpensive to produce.

This need is satisfied by a container according to claim 1 which can be manufactured according to the method of claim 6. An end closure which can be applied to any suitable container body portion to satisfy the said need is specified in claim 8.

According to the present invention, the weakened region is in the form of a region of material of reduced thickness provided on the inside of the container, thereby allowing the container to be axially withdrawn from its mould after the injection-moulding has been carried out. Furthermore, since the region of thinner material is inside the container, no detremental weakening lines mar the external appearance of the container.

In use, such containers can be picked up with one hand and the extension thereon broken off through pressure exerted by the thumb, or a finger, of the same hand.

Preferred embodiments of the present invention are detailed in the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Further advantages of, and applications for, the container of the present invention will become evident from the following description with reference to the drawings in which

Figs. 1 and 2 show a front, respectively side,elevation of a container according to the present invention;

Fig. 3 shows in cross-section an end closure with an extension moulded integrally therewith according to a second aspect of the present invention;

Fig. 4. shows a further embodiment of the invention in which the remote end of the container is weldably pinched together;

Fig. 5 shows a profiled end wall and extension combination, and

Fig. 6 shows a partial section through the end wall and extension of the container according to Fig. 5.

BEST MODE OF CARRYING OUT THE INVENTION

With reference to Figures 1 and 2, reference numeral 1 denotes the body portion of a plastic container having an integral, hollow extension 2 on an end wall 3. The other end of the container is closed by an end wall 4. In the example shown, the container has a substantially cylindrical form, though the cross-section of the container could be of any shape, for example poly-sided.

The extension 2 is moulded integrally with the body portion, or walls, and may be mounted on any wall, i.e. on an end wall as shown, or on the body portion. The extension intersects the wall upon which it is moulded at substantially right angles.

A typical container may have a diameter of 30 mm a body portion length of 60 mm, an extension length of 15 mm and a wall thickness of less than 1 mm.

To produce such a container, an outer die adapted to the desired form of the exterior of the container and an

inner die corresponding to the inner form of the container are used. A gap is maintained between the outer die and inner die which is substantially uniform except for at a region corresponding to the intersection of the extension 2 with the end wall 3. At this region, a line of thinner material is formed by means of a shoulder or chamfer on the inner die. This line of thinner material corresponds to the line of breakage joining the extension 2 to the end wall 3 and may extend around a major portion of the circumferential base section of the extension.

The container may then be filled with the desired contents and the end wall 4 remote from the extension 2 then fixed to the container by any known means, for example hot welding.

In use, when sufficient pressure is exerted in, for example, the direction of arrow 6 (Fig. 2), the material at the intersection 5 will shear, thereby revealing an opening in the container which corresponds in shape to the circumferential base section of the extension. The shape of the circumferential base section need not be rectangular as shown in Figures 1 and 2, but may be any shape, for example round or poly-sided.

In Figures 1 and 2 the extension and its cooperating end wall, together with the cylindrical body portion, are moulded integrally, i.e. in one piece. However, as shown in Fig. 3, in a further aspect of the present invention the extension may be moulded integrally with an end or body portion and then fixed to the remainder of the container in any suitable manner, for example by hot welding.

Thus, the end closure in Fig. 3 comprises an end wall 3 having on one of its major surfaces a hollow extension 2

extending therefrom. In the region of the intersection 5 between the end wall 3 and the hollow extension 2 a line of thinner material is formed as described above. To facilitate the fixing of the end closure to a container body portion 1, the end closure is provided with a circumferential flange 7 which extends substantially perpendicularly from the end wall 3 in a direction away from the extension 2. A second circumferential flange 8 extending in the same direction as the first flange is located radially within the first flange 7. The gap between the two flanges 7,8 substantially corresponds to the wall thickness of the container to which the end closure is to be affixed.

In Fig. 4 an end closure is shown in which the end wall is formed by pressing together the body portion or walls immediately adjacent the filling opening and then welding the wall or walls to form a seam.

From Fig. 5 it can be seen that the end wall need not be flat, but may be profiled to give a more aesthetic shape, whilst still providing a line of weakness at the intersection 5 between the end wall and the extension. This line of weakness is most clearly shown in Fig. 6. and, in this case, is formed by a substantially flat-faced shoulder on the (not shown) inner die of the injection-moulding apparatus.

Naturally, the invention is not limited to that described above, but may be varied within the scope of the appended claims. For example, the line of weakness need not extend around the entire circumferential base section of the hollow extension, but instead a non-weakened region may be left which acts as a plastic hinge for the hollow extension after an opening force has been applied thereto.

CLAIMS

1. A thermoplastic, disposable container for single dosage applications having a body portion (1) and two end walls (3, 4) with a break-off closure means covering an outlet in said container, c h a r a c t e r i z e d in that said closure means comprises a hollow extension (2) of the container, which extension (2) is arranged to be broken away from the container along a breakage line formed by a region of thinner material substantially at an intersection (5) between the base of the extension (2) and a wall (1, 3, 4) of the container, with said breakage line being invisible from the outside of the container.

2. Container according to claim 1, c h a r a c t e - r i z e d in that the extension (2) is located on an end wall (3) of the container.

3. Container according to claim 2, c h a r a c t e - r i z e d in that the body portion (1) and said combined extension/end wall (2, 3) are integrally moulded.

4. Container according to claim 2, c h a r a c t e - r i z e d in that the end wall (4) remote from the combined extension/end wall (2, 3) is fitted to the container after the container has been filled through the opening which this end wall (4) is to seal.

5. Container according to claim 1, c h a r a c t e - r i z e d in that the body portion (1) of the container is a cylinder and that the end walls (3, 4) extend perpendicularly from the inner wall of the cylinder.

6. Method of injection-moulding a container according to any of the previous claims, using an outer die adapted to the desired form of the exterior of the container and an inner die corresponding to the inner form of the container, c h a r a c t e r i z e d in that a gap is maintained between the outer die and inner die which is substantially uniform except for at a region corresponding to the intersection of the extension (2) with the end wall (3) whereat a shoulder or chamfer on the inner die results in, after the injection-moulding, a line of thinner material corresponding to the line of breakage joining the extension (2) to the end wall (3).

7. Method of injection-moulding a container according to claim 6, c h a r a c t e r i z e d in that the end wall remote from the combined extension/end wall (2, 3) is formed by pressing together the body portion (1) immediately adjacent the filling opening and welding the wall (1) or walls to form a seam.

8. An end closure suitable for closing an end of a container body portion, which end closure comprises an end wall (3) with first and second major surfaces, c h a r a c t e r i z e d in that a hollow extension (2) of said end wall (3) extends from an intersection (5) between the end wall (3) and the hollow extension (2) substantially perpendicularly away from said first major surface, and in that a region of thinner material is provided at the intersection (5), thereby creating a line of weakness at said intersection, and in that means (7,8) are provided on the second major surface of the end wall to facilitate attachment of said end closure to a container body portion.

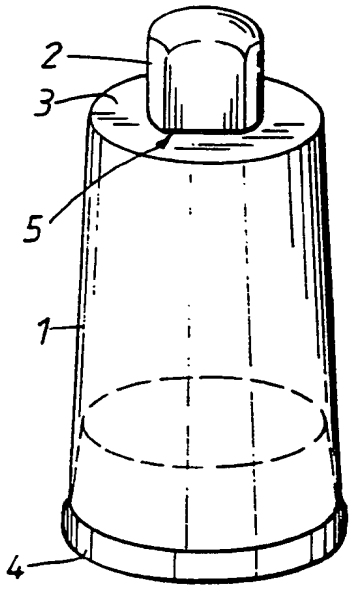

FIG.1

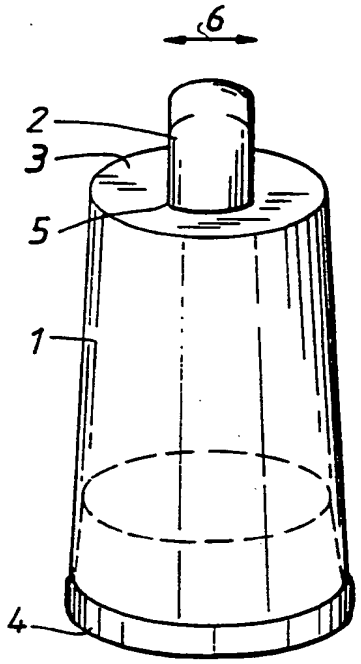

FIG.2

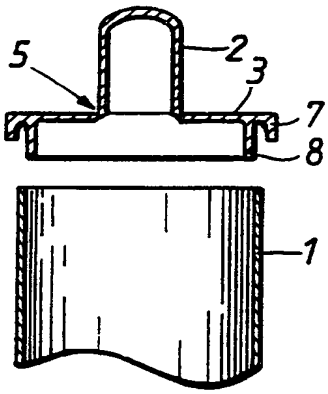

FIG.3

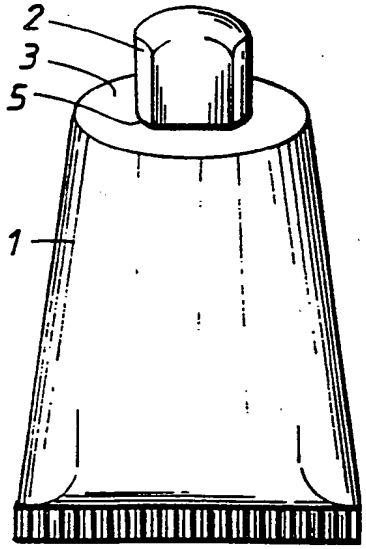

FIG.4

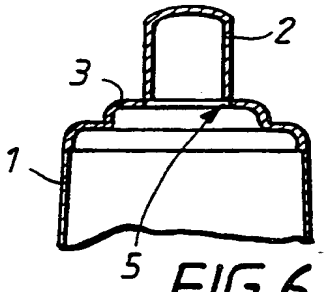

FIG.6

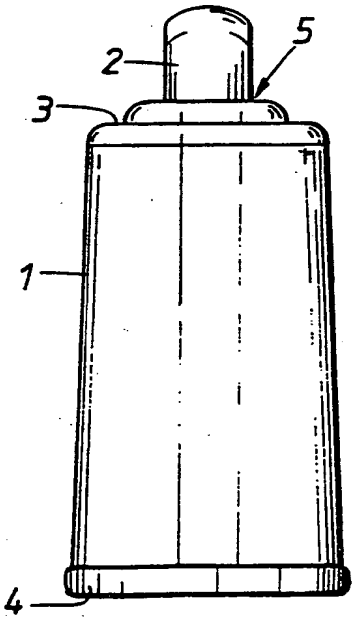

FIG.5

INTERNATIONAL SEARCH REPORT

International Application No PCT/SE 91/00181

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC5: B 65 D 17/40, 35/44//B 29 C 45/00

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
IPC5	B 65 D; B 29 C

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched[8]

SF,DK,FI,NO classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category *	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
X	EP, A3, 0076418 (MONTALBETTI, ERMENEGILDO) 13 April 1983, see page 6, line 20 - page 7, line 2; claims 1-8 --	1-8
X	DE, A1, 2500640 (AB AAKERLUND & RAUSING) 17 July 1975, see the whole document --	1,2
X	FR, A, 1347236 (M. VALER FLAX) 18 November 1963, see figure 1 --	1
X	FR, A, 1181592 (TUBOPLAST-FRANCE (S.A.)) 17 June 1959, see figure 2 --	1

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
27th June 1991	1991 -07- 09
International Searching Authority	**Signature of Authorized Officer**
SWEDISH PATENT OFFICE	Ulrika Drangel

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III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
A	US, A, 4733801 (SCAMMELL) 29 March 1988, see the whole document --	6,7
A	US, A, 4243620 (CURETTI ET AL) 6 January 1981, see the whole document --	6,7

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.PCT/SE 91/00181

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the Swedish Patent Office EDP file on 91-05-29
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